



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

January 13, 2012

Mr. T. Preston Gillespie, Jr.
Site Vice President
Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

**SUBJECT: OCONEE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000269/2011005, 05000270/2011005, 05000287/2011005**

Dear Mr. Gillespie:

On December 31, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Oconee Nuclear Station Units 1, 2, and 3. The enclosed inspection report documents the inspection results, which were discussed on January 12, 2012, with you and other members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

One self-revealing finding of very low safety significance (Green) was identified during this inspection. This finding was determined to involve a violation of NRC requirements. Further, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy. If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Oconee. Also, if you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Oconee.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

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NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA By C. Rapp For/

Jonathan H. Bartley, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 50-269, 50-270, 50-287, 72-04

License Nos.: DPR-38, DPR-47, DPR-55

Enclosure: NRC Integrated Inspection Report 05000269/2011005, 05000270/2011005,
05000287/2011005w/Attachment: Supplemental Information

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Enclosure: NRC Integrated Inspection Report 05000269/2011005, 05000270/2011005, 05000287/2011005w/Attachment: Supplemental Information

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Letter to T. Preston Gillespie, Jr., from Jonathan H. Bartley dated January 13, 2012

SUBJECT: OCONEE NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT
05000269/2011005, 05000270/2011005, 05000287/2011005

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-269, 50-270, 50-287, 72-40

License Nos: DPR-38, DPR-47, DPR-55

Report Nos: 05000269/2011005, 05000270/2011005, 05000287/2011005

Licensee: Duke Energy Carolinas, LLC

Facility: Oconee Nuclear Station, Units 1, 2 and 3

Location: Seneca, SC 29672

Dates: October 1, 2011, through December 31, 2011

Inspectors: A. Sabisch, Senior Resident Inspector
G. Ottenberg, Resident Inspector
K. Ellis, Resident Inspector
A. Sengupta, Reactor Inspector (Section 1R08)
B. Collins, Reactor Inspector (Section 1R08)
G. Laska, Senior Operations Examiner (Section 1R11)
W. Loo, Senior Health Physicist (Sections 2RS1, 2RS3, 4OA1,
4OA5)
A. Nieslen, Senior Health Physicist (Sections 2RS4, 2RS8, 4OA1)
R. Kellner, Health Physicist (Section 2RS2)

Approved by: Jonathan H. Bartley, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000269/2011-005, 05000270/2011-005, 05000287/2011-005; 10/01/2011 – 12/31/2011; Oconee Nuclear Station Units 1, 2 and 3; Radiological Hazard Assessment and Exposure Controls

The report covered a three-month period of inspection by the resident inspectors and six Region-based inspectors. One Green finding was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects are determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Occupational Radiation Safety

- **Green:** A self-revealing, non-cited violation (NCV) of 10 CFR 20.1501(a) was identified for failure to perform adequate surveys to verify radiological conditions within the Unit 3 Reactor Building (RB). This resulted in a worker unknowingly entering an area with dose rates exceeding Locked High Radiation Area (LHRA) conditions, i.e., dose rates exceeding 1,000 millirem per hour (mrem/hr) at 30 centimeters (cm). Corrective actions included surveying all plant areas for proper posting and control in which no additional problem areas were identified, reviewing jobs that had the potential for dose rate changes, and reviewing electronic dosimeter (ED) trends during each shift.

The inspectors determined that the failure to identify the LHRA through adequate surveys that could have revealed changing radiological conditions was a performance deficiency. This performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and RP Controls) and adversely affected the cornerstone objective in that failure to identify significant sources of radiation could lead to unintended occupational exposures. The finding was determined to be of very low safety significance (Green) because it was not related to As Low As is Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised. The finding was directly related to the cross-cutting aspect of Appropriate Coordination of Work Activities in the Work Control component of the Human Performance area because the licensee failed to identify the change in radiological conditions. [H.3(b)].

A violation of very low safety significance that was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

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REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at approximately 100 percent rated thermal power (RTP). On November 19, 2011, power was reduced to approximately 55 percent RTP to repair a duplex strainer on the 1B main feedwater pump (MFDWP). The unit returned to 100 percent RTP on November 24, 2011, where it remained for the rest of the inspection period.

Unit 2 began the inspection period at approximately 100 percent RTP. The unit was removed from service on October 21, 2011, for a refueling outage. The unit was returned to 100 percent RTP on November 19, 2011, where it remained for the rest of the inspection period.

Unit 3 began the inspection period at approximately 100 percent RTP where it remained for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

Readiness for Seasonal Extreme Weather Conditions: The inspectors reviewed the licensee's preparations for adverse weather associated with the cold ambient temperatures at the site. This included field walkdowns to assess the material condition and operation of freeze protection equipment, as well as other preparations made to protect plant equipment from freezing conditions. In addition, the inspectors reviewed the licensee's procedures for preparing for cold weather and conducted interviews with personnel responsible for implementing the licensee's cold weather protection program to assess the licensee's ability to identify and resolve deficient conditions associated with cold weather protection equipment prior to cold weather events. Documents reviewed are listed in the Attachment.

Actual Adverse Weather: The inspectors assessed the licensee's response to the following adverse weather condition. Documents reviewed are listed in the Attachment.

- On December 22, 2011, the licensee entered the abnormal procedure for Natural Disaster in response to notification by the National Weather Service of a Tornado Watch for Oconee County. The inspectors verified actions required by procedure were taken, and a plant walkdown was performed by the inspectors to ensure outside areas of the plant, including the switchyards, were free of debris that could become damaging missiles in the event of tornado force winds. The licensee

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determined an Orange risk condition existed and reviewed the planned work schedule to ensure there was no work that could be affected by the weather condition.

b. Findings

No findings were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial Walkdown: The inspectors performed the three partial walkdowns listed below to assess the operability of redundant or diverse trains and components when safety-related equipment was inoperable or out-of-service and to identify any discrepancies that could impact the function of the system potentially increasing overall risk. The inspectors reviewed applicable operating procedures and walked down system components, selected breakers, valves, and support equipment to determine if they were correctly aligned to support system operation. The inspectors reviewed protected equipment sheets, maintenance plans, and system drawings to determine if the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program (CAP). Documents reviewed are listed in the Attachment.

- Protection of the Unit 1 / Unit 2 Spent Fuel Cooling (SFP) pumps and heat exchangers during the period Unit 2 was in No-Mode and the reactor core was in the SFP
- Protection of the Unit 2 Low Pressure Injection (LPI) pumps and associated equipment used for decay heat removal during the period of lowered reactor coolant system (RCS) inventory following core reload
- Protection of the standby shutdown facility (SSF) when the Keowee Hydro Unit was declared inoperable due to loss of both sump pumps

Full System Walkdown: The inspectors performed a full system walkdown of the Unit 2 LPI system. The inspectors reviewed applicable operating procedures and flow diagrams, and walked down system components; including pumps, valves, and breakers, to determine the system was in an appropriate alignment to provide decay heat removal during and following refueling. Selected portions of support systems, including Low Pressure Service Water, were also reviewed to determine appropriate alignment. Pipe hangers and snubbers were observed to ensure there was no damage to the equipment or interferences that would restrict their movement. The inspectors reviewed protected equipment requirements and verified applicable station requirements were being met. Open work orders and work requests were reviewed to determine their overall impact on the LPI system. The LPI system health report was reviewed to ensure items being tracked by engineering were being addressed as appropriate. Items entered

into the CAP were also reviewed to ensure system alignment issues were being identified and evaluated. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R05 Fire Protection

a. Inspection Scope

Fire Area Tours: The inspectors walked down accessible portions of the five plant areas listed below to assess the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors observed the fire protection suppression and detection equipment to determine if any conditions or deficiencies existed which could impair the operability of that equipment. The inspectors selected the areas based on a review of the licensee's safe shutdown analysis probabilistic risk assessment and sensitivity studies for fire-related core damage accident sequences. Documents reviewed are listed in the Attachment.

- Unit 2 Reactor Building
- Auxiliary Building, First Floor
- Unit 2 East and West Penetration Rooms
- Turbine Building, Third Floor
- Unit 1 and Unit 2 High Pressure Injection (HPI) pump rooms

Fire Drill Observation: Inspectors observed the performance of one fire drill to verify the fire brigade's use of protective gear and firefighting equipment; that fire fighting pre-plan procedures and appropriate fire fighting techniques were used; and that the directions of the fire brigade leader were thorough, clear, and effective. The inspectors observed the control room crew's response to the report of the fire and the resulting emergency declaration. The inspectors also reviewed the post-drill critique to assess if it was appropriately critical, included discussions of drill observations, and identified any areas requiring corrective action. Documents reviewed are listed in the Attachment.

- On December 16, 2011, the licensee simulated a fire in the basement of the Turbine Building adjacent to the Motor Driven Emergency Feedwater (MDEFW) Pumps.

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

Internal Flood Protection: The inspectors reviewed the flood control measures put in place during core bores performed as part of the Protected Service Water (PSW) Condensate Test Line installation. The flood barrier provided by the Turbine Building / Auxiliary Building wall was breached during the installation of the new PSW piping requiring a Complex Activity Plan to be developed and in place prior to the start of the work. The inspectors verified the mitigation measures of the Complex Activity Plan were in place for the duration the flood barrier was not intact, including pre-staged material to seal the opening if conditions required, as well as piping configuration control. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R08 In-service Inspection Activities

a. Inspection Scope

The inspectors conducted a review of the implementation of the licensee's In-service Inspection (ISI) Program for monitoring degradation of the reactor coolant system, steam generator tubes, emergency feedwater systems, risk-significant piping and components and containment systems. The following inspections constituted one in-service inspection sample.

Piping Systems ISI: The inspectors directly observed the following non-destructive examination (NDE) activities and reviewed examination procedures, NDE reports, equipment and consumables certification records, personnel qualification records, and calibration reports (as applicable).

- PT examination of LPSI/elbow-Pipe to flange (Work Order 01929007)
- UT examination of LPSI (Work Order 01928959)
- N-729-1 code case examination of General Visual of Reactor Vessel head

The inspectors also reviewed documentation for the following NDE activities:

- RT examination of HPSI in RCP discharge line (Work Order 01962883-01)
- PT examination of LPSI/elbow-Pipe to flange (Work Order 01929007)
- PT examination of HP 31 valve in seal supply (Work Order 01936354)
- UT examination of LPSI (Work Order 01928959)
- VT-2 examination for N-722 code case CL, HL (Work Order 01929534)
- General visual of reactor vessel head examination (non N-729-1) (Work Order 01930665)
- 2008 video records of reactor vessel head examination (non N-729-1)

- Thermal Package of HPSI in RCP discharge line (Work Order 01962883-01)
- Visual examination of IWF Reactor Vessel Skirt, 11/25/2002

The licensee did not identify any relevant indications that were analytically evaluated and accepted for continued service since the previous Unit 2 outage.

The inspectors observed or reviewed the following pressure boundary welds completed for risk-significant systems during the Unit 2 refueling outage to evaluate if the licensee applied the pre-service NDE and acceptance criteria required by the construction Code, NRC-approved Code Case, NRC-approved Code relief request or the ASME Code Section. In addition, the inspectors reviewed the welding procedure specification, welder qualifications, welding material certification and supporting weld procedure qualification records, to evaluate if the weld procedure(s) were qualified in accordance with the requirements of Construction Code and the ASME Code Section IX.

- Reviewed Welding package for Spray Control Bypass, RC piping and valve
- (Work Order 01780230 20); and
- Observed Welding of HPSI from suction piping drain to 2B letdown cooler (Work Order 1997784).

Reactor Pressure Vessel Upper Head Penetration Inspection Activities: No inspection was conducted during this outage.

Boric Acid Corrosion Control (BACC): The inspectors performed an independent walkdown of portions of the Unit 2 containment which recently received a licensee boric acid walkdown and evaluated if the licensee's BACC visual examinations emphasized locations where boric acid leaks could cause degradation of safety-significant components.

The inspectors reviewed the following licensee evaluations of reactor coolant system components with boric acid deposits listed in the Attachment to determine if degraded components were documented in the CAP. The inspectors also evaluated the corrective actions for any degraded reactor coolant system components against the component Construction Code, ASME Code Section XI, and/or NRC-approved alternative.

The inspectors reviewed the PIPs listed in the Attachment related to evidence of boric acid leakage to evaluate if the corrective actions completed were consistent with the requirements of the ASME Code Section XI and 10 CFR Part 50, Appendix B, Criterion XVI.

Steam Generator (SG) Tube Inspection Activities: The inspectors observed the following activities and/or reviewed the following documentation and evaluated them against the licensee's technical specifications, commitments made to the NRC, ASME Section XI, and Nuclear Energy Institute (NEI) 97-06, Steam Generator Program Guidelines.

- Reviewed the licensee's in-situ SG tube pressure testing screening criteria. In particular, assessed whether assumed NDE flaw sizing accuracy was consistent with data from the EPRI examination technique specification sheets (ETSS) or other applicable performance demonstrations;
- Interviewed Eddy Current Testing (ET) data analysts and reviewed 5 samples of ET data;
- Compared the numbers and sizes of SG tube flaws/degradation identified against the licensee's previous outage Operational Assessment;
- Reviewed the SG tube ET examination scope and expansion criteria;
- Evaluated if the licensee's SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to the licensee's SG tubes;
- Reviewed the licensee's implementation of their extent of condition inspection scope and repairs for new SG tube degradation mechanism(s). No new degradation mechanisms were identified during the ET examinations;
- Reviewed the licensee's repair criteria and processes;
- Primary-to-secondary leakage (e.g., SG tube leakage) was below three gallons per day, or the detection threshold, during the previous operating cycle;
- Evaluated if the ET equipment and techniques used by the licensee to acquire data from the SG tubes were qualified or validated to detect the known/expected types of SG tube degradation in accordance with Appendix H, Performance Demonstration for Eddy Current Examination, of EPRI Pressurized Water Reactor Steam Generator Examination Guidelines, Revision 7;
- Reviewed the licensee's secondary side SG Foreign Object Search and Removal (FOSAR) activities;
- Reviewed the licensee's evaluations and repairs for SG tubes damaged by foreign material or tubes surrounding inaccessible foreign objects left within the secondary side of the steam generators; and
- Reviewed ET personnel qualifications.

Identification and Resolution of Problems: The inspectors performed a review of ISI/SG related problems entered into the licensee's corrective action program and conducted interviews with licensee staff to verify the following attributes and to evaluate compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. Documents reviewed are listed in the Attachment.

- the licensee had established an appropriate threshold for identifying ISI/SG related problems
- the licensee had performed a root cause (if applicable) and taken appropriate corrective actions
- the licensee had evaluated operating experience and industry generic issues related to ISI and pressure boundary integrity

b. Findings

No findings were identified.

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1R11 Licensed Operator Requalification

a. Inspection Scope

Routine Operator Requalification Review: The inspectors observed one active simulator exam to assess the performance of licensed operators during a simulator training session. The scenario included a dropped control rod resulting in an asymmetric rod runback, 1A MFDWP trip and runback, 1B MFDWP trip resulting in a loss of all main feedwater and reactor trip, and a Main Steam Line break inside containment. The inspection focused on high-risk operator actions performed during implementation of the abnormal and emergency operating procedures, and the incorporation of lessons learned from previous plant and industry events. The classification and declaration of the Emergency Plan by the Operations Shift Manager was also observed during the scenario. The post-scenario critique conducted by the training instructor and the crew was observed. Documents reviewed are listed in the Attachment.

Biennial Review of Licensee Requalification Examination Results: On April 18, 2011, the licensee completed the comprehensive biennial requalification written examinations and annual requalification operating tests required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the written examinations, individual operating tests and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing the following two corrective maintenance activities. These reviews included an assessment of the licensee's practices pertaining to the identification, scoping, and handling of degraded equipment conditions, as well as common cause failure evaluations. For each activity selected, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. For those structures, systems and components (SSCs) scoped in the Maintenance Rule per 10 CFR 50.65, the inspectors verified that reliability and unavailability were properly monitored and that 10 CFR 50.65 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. Documents reviewed are listed in the Attachment.

- 2A2 Reactor Coolant Pump seal replacement following abnormal response during Unit 2 shutdown for 2EOC25
- Troubleshooting and repair of the Keowee Hydro Unit (KHU) AC sump pump discharge check valve following the pump's failure to meet acceptance criteria during ISI testing resulting in the KHU being declared inoperable and a 72-hour LCO action statement being entered

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors evaluated the following attributes for the five activities listed below: (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that maintenance risk assessments and emergent work problems were adequately identified and resolved. Documents reviewed are listed in the Attachment.

- Review of the Risk Assessment Report covering the Unit 1 2011 refueling outage
- Assessment and management of the increased risk resulting from dropping RCS loops and draining the reactor vessel to 80" on LT-5 during the Unit 2 outage
- Assessment and management of the increased risk resulting from Unit 2 Main Control board additions during the Unit 2 outage
- Assessment and management of the increased risk resulting from transferring the Unit 2 reactor core to the Unit 1 / Unit 2 SFP
- Assessment and management of the increased risk resulting from operating with lowered RCS inventory following Unit 2 core reload

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following six operability evaluations or functionality assessments affecting risk significant systems to assess: (1) the technical adequacy of the evaluations; (2) whether continued system operability was warranted; (3) whether other existing degraded conditions were considered; (4) if compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) where continued operability was considered unjustified, the impact on Technical Specifications (TS) limiting condition for operations.

Documents reviewed are listed in the Attachment.

- PIP O-11-11751, Potential unanalyzed condition for Keowee governor control system
- PIP O-11-11700, Unit 3 Turbine-driven Emergency Feedwater Pump Inboard pump seal leakage has increased
- PIP O-11-13010, Inability to accurately measure SFP and transfer canal levels can impact RCMU pump operability
- PIP O-11-10647, Low air flow on AHU 3-14; Unit 3 Control Room Air Handling Unit
- PIP O-11-13743, Keowee Hydro Station Sump Pump System
- PIP O-11-14073, Unit 2 "A" Main Steam Line Atmospheric Dump Valves leaking past seat

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following six post-maintenance test procedures and/or test activities to assess if: (1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and demonstrated operational readiness consistent with design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy consistent with the application; (5) tests were performed as written with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. Documents reviewed are listed in the Attachment.

- "C" Spent Fuel Pool Cooling Pump test following lubrication PM and boron cleaning
- "A" Essential Siphon Vacuum header testing following 3ESV-1 emergent replacement
- "B" Low Pressure Service Water Pump Test following pump maintenance
- Unit 2 Main Feeder Bus #2 Hi-Pot Test following preventive maintenance
- 2HP-5 Valve Stroke Test following installation of the SR-100 actuator spring and removal of the temporary air assist modification installed in June 2011
- SSF Diesel-Generator following monthly PMs and generator power factor transducer calibration

b. Findings

No findings were identified.

1R20 Refueling and Outage Activitiesa. Inspection Scope

The inspectors evaluated licensee outage activities associated with to the Unit 2 Refueling Outage to determine if the licensee considered risk in developing outage schedules; adhered to administrative risk reduction methodologies they developed to control plant configuration; adhered to operating license, TS and Selected Licensee Commitment requirements and procedural guidance that maintained defense-in-depth; and developed mitigation strategies for losses of the key safety functions. The inspectors reviewed the licensee's outage risk control plan to assess the adequacy of the risk assessments that had been conducted and that the licensee had implemented appropriate risk management strategies as required by 10 CFR 50.65(a)(4). The inspectors conducted portions of the following activities associated with the refueling outage. Documents reviewed are listed in the Attachment.

- Observed Just-in-Time training conducted for the shift involved in the removing the unit from service, unit cooldown, the approach to criticality, and placing the generator on-line
- Observed power reduction process, removing the reactor from service, and portions of the cooldown from normal operating pressure and temperature to ensure that the requirements in the TS and Selected Licensee Commitments were met
- Conducted a containment entry once Mode 3 had been reached to observe the condition of major, normally-inaccessible equipment and check for indications of previously unidentified leakage from the reactor coolant system including the reactor vessel upper and bottom head penetrations
- Reviewed the licensee's responses to emergent work and unexpected conditions to verify that resulting configuration changes were controlled in accordance with the outage risk control plan
- Observed the removal and reinstallation of the reactor vessel head and plenum assembly to ensure the lift was conducted in accordance the station procedures and heavy lift guidance
- Periodically reviewed the setting and maintenance of containment integrity, to establish that the RCS and containment boundaries were in place and had integrity when necessary
- Observed fuel handling operations including new fuel receipt, movement into the spent fuel pool, fuel offload, and fuel reload to verify that those activities were performed in accordance with TS and procedural guidance and reviewed the videotaped core loading verification and alignment with Reactor Engineering personnel
- Reviewed system lineups and/or control board indications to verify that TS, license conditions, and other requirements, commitments, and administrative procedure prerequisites for mode changes were met prior to changing modes
- Conducted containment walkdown to inspect for overall cleanliness and material condition of plant equipment after the licensee completed their closeout inspection prior to restart
- Observed the approach to criticality, placing the main generator on-line, and portions

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of the power ascension activities

- Reviewed the items that had been entered into the CAP to verify that the licensee had identified outage related problems at an appropriate threshold
- Reviewed the licensee's processing of workers as they transitioned from on-line to outage work hour restrictions and then back to on-line schedules at the completion of the Unit 2 refueling outage
- Observed activities to verify that the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable TS when taking equipment out of service

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either witnessed and/or reviewed test data for the eight surveillance tests listed below to assess if the SSCs met TS, Updated Final Safety Analysis Report (UFSAR), and licensee procedure requirements. In addition, the inspectors determined if the testing effectively demonstrated that the SSCs were ready and capable of performing their intended safety functions. Documents reviewed are listed in the Attachment.

Routine Surveillances

- PT/2/A/0610/001 J, Emergency Power Switching Logic Functional Test, Rev. 039
- PT/0/A/0775/015, Core Alignment Verification Procedure, Rev. 12
- PT/2/A/0400/020, SSF RC Letdown Line Discharge Test, Rev. 3
- IP/0/A/3010/011, Inspection and Cleaning of Electrical Penetration Enclosures, Rev. 011
- PT/2/A/0600/001, Enc. 13.1, Periodic Instrument Surveillance Modes 1&2, Rev. 294

In-Service Tests

- PT/1/A/0600/013, Motor Driven Emergency Feedwater Pump Test, Rev. 68

Containment Isolation Valve Tests

- PT/2/A/0151/042, Penetration 42 Leak Rate Test, Rev. 8
- PT/2/A/0151/024, Penetration 24 Leak Rate Test, Rev. 8

b. Findings

No findings were identified.

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors evaluated an Emergency Response Organization unannounced after-hours callout drill held on October 17, 2011, which involved activation of the Oconee Technical Support Center (TSC), Operations Support Center and Emergency Operations Facility (EOF) in Charlotte. The licensee's response to the simulated event was observed from the Oconee TSC. The staff's simulated activation of the Emergency Plan and performing offsite notifications were also observed. The drill involved a failed freeze plug in the Unit 1 West Penetration room resulting in the release of nitrogen and formation of a toxic environment in the area. The drill was terminated once adequate staffing had been confirmed, the TSC and EOF had been declared operable and both locations had prepared a notification form. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Hazard Assessment and Instructions to Workers: During facility tours and Unit 2 containment walkdown, the inspectors directly observed labeling of radioactive material and postings for radiation areas (RAs), high radiation areas (HRAs), and Very High Radiation Areas (VHRAs) in the radiologically controlled areas (RCAs), Independent Spent Fuel Storage Installations (ISFSIs), and radioactive waste (radwaste) processing and storage locations. The inspectors reviewed survey records for several plant areas including surveys for alpha emitters, hot particles, airborne radioactivity, gamma surveys within areas of high dose rate gradients, and pre-job surveys for upcoming tasks. For selected Unit 2 refueling outage work, the inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiological control requirements and current radiological conditions to workers.

Hazard Control and Work Practices: The inspectors evaluated access barrier effectiveness for Locked High Radiation Area (LHRA) and VHRA locations. Procedures for LHRA and VHRA access controls were discussed with health physics (HP) supervisors. Controls and their implementation for storage of irradiated material within the spent fuel pool (SFP) were reviewed and discussed. Established radiological controls were evaluated for selected Unit 2EOC25 tasks, including plenum move, 2RC1 decontamination and disassembly, letdown filter exchange, and pulling incore detectors. Occupational workers' adherence to selected RWPs and HP technician (HPT) proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker

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stay times were evaluated against area radiation survey results for selected work activities. Worker response to dose and dose rate alarms during selected work activities was evaluated. HPT coverage and actions at the Unit 2 containment access point were reviewed.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA using small article monitor, personnel contamination monitor, and portal monitor instruments. The inspectors reviewed records and walked down storage locations for sealed sources. The inspectors walked down the SFP and discussed non-fuel material stored in the SFP with RP personnel. The inspectors also walked down portions of the ISFSI.

Problem Identification and Resolution: PIPs associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with Nuclear System Directive (NSD) 208, Problem Investigation Program (PIP), Rev. 33. RP activities were evaluated against the requirements of 10 CFR Part 20 and approved licensee procedures.

Documents reviewed are listed in the Attachment.

b. Findings

Introduction: A Green, self-revealing NCV of 10 CFR 20.1501(a) was identified for failure to perform adequate surveys to verify radiological conditions within the Unit 3 Reactor Building (RB). This resulted in a worker unknowingly entering an area with dose rates exceeding Locked High Radiation Area (LHRA) conditions, i.e., dose rates exceeding 1,000 millirem per hour (mrem/hr) at 30 centimeters (cm).

Description: During the Unit 3 outage, a HPT entered the RB to perform staging of video and audio surveillance equipment. Upon logging out, the HPT discovered that the ED had alarmed at a dose rate at 1,000 mrem/hr which exceeded the ED dose rate alarm setpoint of 500 mrem/hr. A review of the ED histogram data indicated that the ED alarmed when the HPT passed by Pressurizer Surge Line Drain Block Valves 3RC17 and 3RC18.

Around the same time the HPT logged out, another HPT was performing a pre-job survey of the same valves in preparation for pressurizer cooldown and primary system pipe flush. The HPT discovered dose rates of 25 rem per hour (R/hr) on contact and 2 R/hr at 30 cm. which met the requirements for a LHRA. The HPT began establishing postings and access controls for the area. The previous area survey completed 24 hours earlier did not find elevated radiation levels. The licensee determined that the elevated dose rates were the result of CRUD shifting down the piping associated with the 3RC17 and 3RC18 valves. The licensee was aware that dose rates in this area could suddenly become elevated based on previous operating experience. The radiological surveillance program required a survey in the area around valves 3RC17 and 3RC18 to establish the actual radiological conditions prior to the first HPT entering the area to perform work.

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Analysis: The inspectors determined that the failure to identify the LHRA through adequate surveys that could have revealed changing radiological conditions was a performance deficiency. This performance deficiency was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and RP Controls) and adversely affected the cornerstone objective in that failure to identify significant sources of radiation could lead to unintended occupational exposures. The finding was evaluated using the Occupational Radiation Safety SDP and was determined to be of very low safety significance (Green) because it was not related to As Low As is Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised. The finding was directly related to the cross-cutting aspect of Appropriate Coordination of Work Activities in the Work Control component of the Human Performance area because the licensee failed to identify the change in radiological conditions. [H.3(b)].

Enforcement: 10 CFR 20.1501(a) stated, in part, that surveys are reasonable under the circumstances to evaluate the potential radiological hazards. Contrary to the above, on October 23, 2010, the licensee failed to perform reasonable surveys to adequately identify the potential radiological hazards associated with the 3RC17 and 3RC18 valves in the Unit 3 Reactor Building. This resulted in an uncontrolled LHRA and a worker ED alarm in the vicinity of the 3RC17 and 3RC18 valves. Corrective actions included surveying all plant areas for proper posting and control, reviewing jobs that had the potential for dose rate changes, and reviewing ED trends during each shift. Because this violation was of very low significance and was entered into the licensee's corrective action program as PIP O-10-08137, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000269, 270, 287/2011005-01, Failure to Perform Adequate Surveys to Identify Potential Radiological Hazards.

2RS2 Occupational ALARA Planning and Controls

a. Inspection Scope

ALARA Program Status: The inspectors reviewed and discussed plant exposure history and current trends including the site's three-year rolling average (TYRA) collective exposure history for calendar year (CY) 2008 through CY 2010. Current and proposed activities to manage site collective exposure and trends regarding collective exposure were evaluated through review of previous TYRA collective exposure data and review of the licensee's 5-year ALARA program implementing plan. Current ALARA program guidance and recent changes, as applicable, regarding estimating and tracking exposure were discussed and evaluated.

Radiological Work Planning: The inspectors reviewed selected planned work activities and their collective exposure estimates for the Unit 2EOC25. Unit 2EOC25 work activities, exposure estimates and mitigation activities were reviewed for the following high collective exposure tasks: reactor vessel plenum removal and replacement; defuel and refuel operations; incore instrumentation work; Letdown Cooler 2B removal and replacement; steam generator (S/G) nozzle dam and manway installation and removal; and S/G Eddy Current inspection work. For the selected tasks, the inspectors reviewed dose mitigation actions and established dose goals. During the inspection, use of

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remote technologies including teledosimetry and remote visual monitoring were verified as specified in RWP or procedural guidance. Current collective dose data for selected tasks were compared with established estimates and, where applicable, changes to established estimates were discussed with responsible licensee ALARA planning representatives. The inspectors reviewed selected post-job reviews conducted for previous refueling outage work and verified that the items were entered into the licensee's corrective action program for evaluation. The inspectors also observed mock up training of S/G eddy current inspection workers.

Verification of Dose Estimates and Exposure Tracking Systems: The inspectors reviewed select ALARA work packages and discussed assumptions with responsible planning personnel regarding the bases for the current estimates. The licensee's on-line RWP cumulative dose data bases used to track and trend current individual and cumulative exposure data and/or to trigger additional ALARA planning activities in accordance with current procedures were reviewed and discussed. Selected work-in-progress reviews for letdown cooler replacement work activities and adjustments to cumulative exposure estimate data were evaluated against work scope changes or unanticipated elevated dose rates.

Source Term Reduction and Control: The inspectors reviewed historical dose rate trends for shutdown chemistry, cleanup, and resultant chemistry and radiation protection trend-point data against the current Unit 2EOC25 data. Licensee actions to mitigate noble gas and iodine exposures resulting from fuel leaks were reviewed.

Problem Identification and Resolution: The inspectors reviewed and discussed selected PIPs associated with ALARA program implementation. The reviewed items included PIPs, self-assessments, and quality assurance audit documents. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedure NSD 208. The licensee's ALARA program activities and results were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; TS Sections 5.4 and 5.5; 10 CFR Parts 19 and 20; and approved licensee procedures.

Radiation worker performance is documented in section 2RS1. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation

a. Inspection Scope

Plant Airborne Radioactivity Controls and Mitigation: The inspectors reviewed the plant's UFSAR to identify areas with the potential for elevated airborne radionuclide concentrations. Selected engineering controls for selected areas of the plant were discussed with radiation protection and operations staff to include the Radwaste

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Building, SFP, and the Auxiliary Building. In addition, selected licensee documents including Technical Specifications, UFSAR, design basis documents, Emergency Response Organization rosters, and procedures associated with plant airborne radioactivity controls and monitoring, and with respiratory protection program and emergency planning implementation were reviewed and discussed with cognizant licensee representatives.

Engineering Controls: The inspectors reviewed the use of temporary and permanent engineering controls to mitigate airborne radioactivity for selected Unit 2 refueling outage work activities. The inspectors observed the use of high efficiency particulate air ventilation and vacuums to control contamination during surface disturbing work. Air sampling analysis results and radiological surveys for selected jobs in contaminated areas with the potential for producing airborne conditions were also reviewed. The inspectors evaluated the effectiveness of continuous air monitors and air samplers placed in selected work area “breathing zones” to provide indication of increasing airborne levels.

Use of Respiratory Protection Equipment: The inspectors reviewed the use of respiratory protection devices to limit the intake of radioactive material. This included review of devices used for routine tasks and devices stored for use in emergency situations and selected Unit 2 refueling outage work activities. Selected Self-Contained Breathing Apparatus (SCBA) units and negative pressure respirators (NPR) staged for routine and emergency use in the Unit 1, Unit 2 and Unit 3 Control Rooms and the Safe Shutdown Facility (SSF) were inspected for material condition, SCBA bottle air pressure, number of units, and number of spare masks and air bottles available. The inspectors reviewed maintenance records for selected SCBA units and evaluated SCBA and NPR compliance with National Institute for Occupational Safety and Health certification requirements. The inspectors also reviewed records of air quality testing for supplied-air devices and SCBA bottles.

The inspectors reviewed ALARA evaluations for the use of respiratory protection devices for selected work activities conducted during the Unit 2 refueling outage to include the 2B Letdown Filter Replacement, 2RC1 valve maintenance, and Steam Generator ISI work activities.

The inspectors verified the licensee had procedures in place to ensure that the use of respiratory protection devices was ALARA when engineering controls were not practicable. Selected security guards, Control Room operators and RP personnel were interviewed on the use of the devices to include SCBA bottle change-out and use of corrective lens inserts. Respirator qualification records and medical fitness cards were reviewed for selected emergency responder personnel in the Maintenance, Operations, Security, Chemistry and RP departments. In addition, qualifications for individuals responsible for testing and repairing SCBA vital components were evaluated through review of selected training records.

The inspectors verified that the licensee has procedural requirements in place for evaluating air samples for the presence of alpha emitters and reviewed airborne radioactivity and contamination survey records for several plant areas to ensure air

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samples are screened and evaluated per the procedure requirements.

The inspectors walked down the respirator issue and storage locations to include and verified that the equipment was appropriately stored and maintained. Records of monthly and annual inspection of the equipment were also reviewed by the inspectors. The inspectors discussed the process for issuing respirators, and verified that selected individuals qualified for respirator and/or SCBA use had completed the required training, fit-test, and medical evaluation. In addition, the inspectors walked down the two compressors used for filling SCBA bottles and reviewed records of Grade D air testing for the compressors and breathing air systems. The ability to fill and transport bottles to the Control Room and SSF during an emergency was assessed by the inspectors.

Self-Contained Breathing Apparatus for Emergency Use: The inspectors reviewed the status and surveillance records of SCBAs staged for in-plant use during emergencies through review of records and walk-down of SCBA staged in the Unit 1, Unit 2 and Unit 3 control rooms, Body Burden Analysis Room, and the SSF. The walk-down verified the appropriate number of SCBA kits were staged as specified by the emergency plan, appropriate mask sizes and types available for use, and, through interviews, that users were knowledgeable of storage locations of SCBA, spare masks, and vision correction, as well as how to don and use the equipment. Selected maintenance records for SCBA units and air cylinder hydrostatic testing documentation were reviewed.

Problem Identification and Resolution: The inspectors reviewed and assessed CAP documents associated with the control and mitigation of in-plant radioactivity. This included review of selected PIPs related to use of respiratory protection devices including SCBA. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure NSD 208, Problem Investigation Program, Rev. 33. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Radiation protection activities were evaluated against the requirements UFSAR Section 12; 10 CFR Parts 19 and 20; Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection; and approved licensee procedures.

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment

a. Inspection Scope

External Dosimetry: The inspectors reviewed National Voluntary Laboratory Accreditation Program (NVLAP) certification data (including thermoluminescent dosimeter (TLD) testing for gamma and beta exposures) and discussed program guidance for storage, processing, and evaluation of results for active and passive personnel dosimeters currently in use. Comparisons between ED and TLD dose results were discussed in detail. In addition, the inspectors reviewed unusual dosimetry occurrences and ED alarm logs and evaluated licensee assessment actions.

Internal Dosimetry: Program guidance (including derived air concentration (DAC)-hr tracking), instrument detection capabilities, and assessment results for internally deposited radionuclides were reviewed in detail. The inspectors reviewed selected *in vivo* (Whole Body Count) and *in-vitro* (fecal sample) analyses from May 2010 – November 2011. Capabilities for collection and analysis of special bioassay samples were evaluated and discussed with licensee staff.

Special Dosimetric Situations: The inspectors evaluated the licensee's use of multi-badging, extremity dosimetry, and dosimeter relocation within non-uniform dose rate fields and discussed worker monitoring in neutron areas with licensee staff. The inspectors also reviewed records of monitoring for declared pregnant workers from November 2009 – November 2011 and discussed monitoring guidance with dosimetry staff. Procedural guidance for shallow dose assessment was reviewed and discussed.

Problem Identification and Resolution: The inspectors reviewed and discussed selected CAP documents associated with occupational dose assessment. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure NSD 208, Problem Investigation Process, Rev. 33. The inspectors also discussed the scope of the licensee's internal audit program and reviewed recent assessment results. Occupational dose assessment activities were evaluated against the guidance in RG 8.9, Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program, and requirements in UFSAR Section 12; TS Section 5.4; 10 CFR Parts 19 and 20; and approved licensee procedures.

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radwaste processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included radwaste storage tanks; resin transfer piping; resin and filter packaging components; and abandoned evaporator equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff.

The 2010 Annual Radioactive Effluent Release Report and radionuclide characterizations from 2009 - 2011 for each major waste stream were reviewed and discussed with radwaste staff. For primary resin, reactor coolant system filters, and Dry Active Waste (DAW) the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance (QA) comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing, concentration averaging, and waste form stabilization (dewatering) for resins and filters was evaluated and discussed with radwaste staff. The inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

Radioactive Material Storage: During walk downs of indoor and outdoor radioactive material storage areas, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors also reviewed licensee procedural guidance for storage and monitoring of radioactive material.

Transportation: The inspectors observed preparation activities for two shipments of contaminated trash. The inspectors observed licensee surveys of the shipping packages, performed independent dose rate measurements, observed shipping package marking and placarding, and interviewed shipping technicians regarding Department of Transportation (DOT) regulations. Selected shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for opening and closing shipping casks were compared to recommended vendor protocols and Certificate of Compliance requirements.

Problem Identification and Resolution: The inspectors reviewed CAP documents in the areas of radwaste processing, material storage, and transportation. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure NSD 208. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results. Radwaste processing, radioactive material handling, and transportation activities were reviewed against the requirements contained in the licensee's Process Control Program, UFSAR Chapter 11;

10 CFR 20; 10 CFR 61; 10 CFR 71; and 49 CFR Parts 172-178. Licensee activities were also evaluated against guidance provided in the Branch Technical Position on Waste Classification (1983) and NUREG-1608, "Categorizing and Transporting Low Specific Activity Materials and Surface Contaminated Objects."

Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported PI data for the following eight PIs. To determine the accuracy of the report PI elements, the reviewed data was assessed against PI definitions and guidance contained in Nuclear Energy Institute 99-02, Regulatory Assessment Indicator Guideline, Revision 5. Documents reviewed are listed in the Attachment.

Cornerstone: Mitigating Systems (MS)

- MSPI, Emergency AC (3 units)
- Safety System Functional Failures (3 units)

For the period of October 1, 2011, through December 31, 2011, the inspectors reviewed Operating Logs, Train Unavailability Data, Maintenance Records, Maintenance Rule Data, PIPs, Consolidated Derivation Entry Reports, and System Health Reports to verify the accuracy of the PI data reported for each PI.

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

The inspectors reviewed the PI results for the period September 2010 to September 2011. The inspectors reviewed ED alarm logs and selected CRs related to controls for exposure significant areas. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data.

Cornerstone: Public Radiation Safety

- Radiological Control Effluent Release Occurrences

The inspectors reviewed the PI results for the period September 2010 to September 2011. The inspectors reviewed cumulative and projected doses to the public, monthly PI reports, and PIPs related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance

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for collecting and documenting PI data.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Daily Screening of Corrective Action Reports

In accordance with Inspection Procedure (IP) 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed daily screening of items entered into the licensee's CAP. This review was accomplished by reviewing copies of PIPs, attending daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample

a. Inspection Scope

Electrical Penetration Box Inspection and Maintenance Activities Following the August 2010 NRC Environmental Qualification Inspection: Following questions related to the environmental qualification of electrical penetration assemblies used at the station being raised by NRC personnel in the 2009 – 2010 timeframe as well as a Environmental Qualification (EQ) inspection conducted in August of 2010, the licensee revised the maintenance procedure used to inspect electrical penetration boxes in the East and West penetration rooms as well as perform maintenance on the enclosures. The inspectors reviewed the revised procedures and observed the licensee's maintenance personnel conduct inspections and maintenance on a sample of electrical penetration boxes in Unit 1 and Unit 2 during the refueling outages conducted in 2011. In addition to the observed activities, the inspectors reviewed the completed procedures for each unit and reviewed the photographs taken of the electrical penetration boxes showing the as-found and as-left conditions. Based on feedback from the inspectors following the initial inspections performed on Unit 1 during the Spring 2011 refueling outage, additional guidance and direction was provided to the maintenance personnel performing the inspections and the procedure was revised to include enhanced guidance. The NRC inspectors reviewed the revised procedures and observed their implementation during subsequent inspections on Unit 1 and Unit 2. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by IP 71152, Problem Identification and Resolution, the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screenings discussed in section 4OA2.1 above, licensee trending efforts, licensee human performance results and inspector observations made during in-plant inspections and walk-downs. The inspectors' review primarily considered the six-month period of July 2011 through December 2011, although some examples expanded beyond those dates when the scope of the trend warranted. The review also included issues documented outside the normal CAP in major equipment problem lists, plant health team lists, Independent Nuclear Oversight reports, system and component health reports, self-assessment reports, and maintenance rule reports. The inspectors compared and contrasted their results with the results contained in the licensee's latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

b. Findings and Observations

Capturing Plant Issues in the Corrective Action Program: The inspectors identified a trend associated with weaknesses in the implementation of the CAP program which was documented in IR 05000269, 270, 287/2009005. The trend focused on inconsistent initiation of PIPs when the criteria in the CAP was met and not fully describing the issue to allow appropriate corrective actions to be developed or trends codes applied to allow for adverse trends to be readily identified. The licensee initiated PIP O-10-0182 in early 2010; however, the corrective actions developed were narrowly focused. As a result, examples continued to be noted in both the inconsistent initiation of PIPs and describing the issue in sufficient detail and clarity. The licensee initiated another PIP which expanded the scope of the initial PIP and conducted an apparent cause evaluation to ensure appropriate corrective actions were developed and implemented in a timely manner. Improvement in these areas remains inconsistent and continuing examples have been noted by the inspectors over the past six months. The inspectors will continue to monitor the licensee's progress in this area.

Control of Transient Combustible Material: The inspectors reviewed a trend associated with the licensee's repeated failure to control transient combustible material according to NSD 313, Control of Transient Fire Loads. Multiple examples of the licensee's failure to meet the fire protection program requirements were identified during 2011 by the inspectors as well as multiple onsite groups, including Operations and Independent Nuclear Oversight (INOS). Corrective actions taken on the individual occurrences have been inadequate to prevent repeated violations of the fire protection program requirements. While the licensee has initiated PIP O-11-13389 to address the negative trend, the inspectors will continue to monitor the licensee's progress in this area.

4OA3 Event Follow-up.1 On-Site Chlorine Leaka. Inspection Scope

On November 2, 2011, a chlorine leak occurred near the water treatment room inside the protected area requiring the response of the station's Hazmat team to isolate the leak. The inspectors observed the licensee's response from the control room and evaluated the licensee's determination that an emergency condition did not exist. The licensee's monitoring of the environmental chlorine concentrations as a result of the leak was reviewed to determine the emergency action level requirements were not met. Operator response and entry into the station spill response procedure was observed. The licensee documented this in PIP O-11-13203. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

- .2 (Closed) Licensee Event Report (LER) 05000269, 270, 287/2011-03-01; Inoperability of the Standby Shutdown Facility Diesel Generator: On May 13, 2010, an unanticipated SSF differential lockout relay (86D) actuation occurred while performing an emergency power switching logic functional test which rendered the SSF diesel generator incapable of starting in any mode. Immediate actions were taken to remove the modification that had been installed in 2008 which had resulted in the lockout signal being generated if the chart recorder that had been replaced under a modification package lost power. The licensee performed a review of all installed chart recorders which could produce a similar unanticipated actuation and did not identify any other chart recorders that provided input into a trip function. The inspectors verified the adequacy of the immediate corrective actions, reviewed the licensee's root cause evaluation and the scope of the additional corrective actions intended to prevent recurrence. The enforcement aspects of this issue are discussed in Inspection Report 05000269, 270, 287/2011003, and the issue was dispositioned as NCV 05000269, 270, 287/2011002-02, Inadequate Post Modification Testing to Ensure SSF DG Functionality. The licensee entered this issue into their CAP as PIP O-10-3882.

4OA5 Other Activities.1 Quarterly Resident Inspector Observations of Security Personnel and Activitiesa. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities

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did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings were identified.

.2 (Closed) TI 2515/179 Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System (NSTS) Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207)

a. Inspection Scope

The inspectors reviewed the licensee's source inventory records and identified the sources that met the criteria for reporting to the NSTS. The inspectors visually identified the sources contained in various calibration systems and verified the presence of the source by direct radiation measurement using a calibrated portable radiation detection survey instrument. The inspectors reviewed the physical condition of the irradiation device. The inspectors reviewed the licensee's procedures for source receipt, maintenance, transfer, reporting and disposal. The inspectors reviewed documentation that was used to report the sources to the NSTS. Documents reviewed are listed in the Attachment. This completes the Region II inspection requirements.

b. Findings

No findings were identified.

40A6 Management Meetings (Including Exit Meeting)

Exit Meeting Summary

The resident inspectors presented the inspection results to Mr. T. Preston Gillespie, Jr., and other members of licensee management on January 12, 2012. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary and no proprietary information was identified.

40A7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a NCV.

- TS 5.4.1.a required that procedures defined in RG 1.33 shall be established and implemented. RG 1.33, Appendix A, stated, in part, that written procedures for control of radioactivity shall be developed and implemented. Section 4.2.1 to Procedure No. SH/0/B/2000/008, Operational Alpha Program, Rev. 7, stated, in part,

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that if smears over 20,000 dpm/100 cm² beta-gamma are identified, an analysis of the smear for alpha be performed. Contrary to the above, on May 12, 2010, a smear conducted on an area of a Reactor Coolant Storage System pipe had 80,000 dpm/100 cm² beta-gamma and the licensee did not analyze it for alpha. The finding was not greater than very low safety significance (Green) because it did not involve an overexposure and the licensee's ability to assess dose was not compromised. The licensee entered the violation into their CAP as PIP O-10-03822.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Alter, Regulatory Compliance Manager
S. Batson, Station Manager
A. Best, BACP Coordinator
S. Boggs, Emergency Services Coordinator
E. Burchfield, Superintendent of Operations
J. Eaton, ISI Coordinator
P. Fisk, Mechanical/Civil Engineering Manager
P. Gillespie, Site Vice President
R. Guy, Organization Effectiveness Manager
M. Hatley, Duke Energy Temporary Oconee Steam Generator Engineer
R. Hester, IWL Responsible Engineer
E. Hurley, Duke Energy Steam Generator Tube Integrity Engineer
T. King, Security Manager
D. Mayes, Steam Generator Maintenance & Engineering
B. Meixell, Emergency Planning Manager
T. Patterson, Safety Assurance Manager
J. Pounds, OMP Tornado/HELB QA Oversight
T. Ray, Engineering Manager
F. Rickenbaker, OMP Manager
D. Robinson, Radiation Protection Manager
J. Smith, Regulatory Compliance
T. Thulien, Duke Energy Steam Generator Eddy Current Level III

NRC

J. Stang, Project Manager, NRR

LIST OF REPORT ITEMS

Opened and Closed

05000269, 270, 287/2011005-01 NCV Failure to Perform Adequate Surveys to Identify Potential Radiological Hazards (Section 2RS1)

Closed

05000269, 270, 287/2011-03-01 LER Inoperability of the Standby Shutdown Facility Diesel Generator (Section 4OA3.2)

2515/179 TI Verification of Licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System (NSTS) Pursuant to Title 10, Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207) (Section 4OA5.2)

DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

OP/0/B/1104/050, Weather Related Activities, Rev. 1
 OP/0/A/2000/043, KHS Shift Turnover and Rounds, Rev. 32
 OP/0/A/1104/041, Auxiliary Building Ventilation, Rev. 33
 OP/1/A/1104/051, ESV System, Rev. 23
 PT/0/A/0110/017, Cold Weather Protection, Rev. 4
 OP/0/B/1106/041, Turbine Building Ventilation, Rev 10
 OP/0/A/1600/002, SSF Heating and Ventilation Operation, Rev 31
 IP/0/B/1606/009, Preventive Maintenance and Operational Checks of Freeze Protection, Rev. 032
 MP/0/B/3007/059, Plant Heater Testing, Rev 04
 PIP O-11-11864, Work Order 01971852 (U3 BWST Inst cold weather check of BWST Heaters cannot be performed as scheduled because of interference in work area. BWST project has scaffolding in area and must be removed to meet commitment date of November 1
 PIP O-11-11777, WO 01971852-01 (U3, BWST Inst., Cold Weather Check of BWST Heaters) not completed due to predecessor task (02-U3, BWST Inst. Line, Remove Non-ASB Insul Impulse Line) not being completed.
 PIP O-10-9308, ONS cold weather preps NOT complete by Nov 1. The cold weather program for ONS needs to be fixed.
 PIP O-11-13273, Various problems preventing timely completion of Cold Weather Protection procedures
 PIP O-11-13524, OP/0/B/1104/050 Weather Related Activities not complete
 PIP O-11-13569, PT/0/A/0110/017 "Cold Weather Protection" Enclosure 13.5 step 2.1 needs to be revised
 WO 0187006. Winter Weatherization- ONS
 WO 01971847, U0- Test Turbine Building Unit Heaters
 WO 01900629, 3VS AH0007: Repair LPSW Coil Leak on South End of AHU 3-7
 WO 01973120, KHU-1 GBO Cooler Seasonal Isolation (1st Week of Dec)
 WO 01973136, KHU-2 GBO Cooler Seasonal Isolation (1st Week of Dec)
 PIP O-11-15318, Tornado Watch in effect for Oconee county until 23:00.
 AP/0/A/1700/006, Natural Disaster, Rev. 22
 SD 3.2.13, Site Materiel Condition- Area Owner Program, Rev. 8

Section 1R04: Equipment Alignment

O FD-102A-2.1, Flow Diagram of Low Pressure Injection System (Borated Water Supply and LPI Pump Suction), Rev. 51
 O FD-102A-2.2, Flow Diagram of Low Pressure Injection System (LPI Pump Discharge), Rev. 44
 O FD-102A-2.1, Flow Diagram of Low Pressure Injection System (Core Flood), Rev. 22
 OP/2/A/1104/004, Low Pressure Injection System, Rev. 149
 OP/2/A/1102/015, Filling and Draining FTC, Rev. 70
 OSS-0254.00-00-1028, Low Pressure Injection and Core Flood System (LPI), Rev. 40
 LPI System Health Report (4/1/2011- 6/30/2011)
 WO 01893275, Replace 2LP-95 Bonnet Gasket
 WO 01963587, PM 2LP-25 Relief Valve
 WO 01874818, EC 97968/ Replace 2", Class B, Manual Valve 2LP-96

Section 1R05: Fire Protection

NSD 313, Control of Transient Fire Loads, Rev. 10
 MP/O/A/1705/032, Fire Protection Equipment Inspection, Rev. 33
 Fire Pre-plan, Zone 123- Unit 2 Reactor Building
 Fire Pre-plan, First Floor Auxiliary Building
 Fire Pre-plan, Turbine Bldg. Mezzanine
 PIP O-11-13302, Combustible material is being stored in a fire exclusion area in the Unit 2 Reactor Building (RB) near the normal sump
 PIP O-11-13589, Transient Fire Load Approval Form (form 313-1 from NSD-313) for Unit 2 Reactor Building Basement could not be located
 PT/O/B/2000/050, Fire Drill – Performance and Evaluation, Rev. 0
 PIP O-11-15190, Fire Drill Lessons Learned: B Shift 4th QTR 2011

Section 1R06: Flood Protection Measures

OD300935 (EC91860) Installation of Condensate Test Line Complex Activity Plan, Rev. 0

Section 1R08: Inservice Inspection Activities**Procedures**

MP/O/A/1800/132, Inspection and Cleaning of Boric Acid on Plant Materials, Revision 7
 NDE-10, General Radiography, Revision 24, August 28, 2008
 NDE-12, General Radiography for Preservice and Inservice Inspection, Revision 14, December 7, 2009
 NDE-35, Liquid Penetrant Examination, Revision 23, February 23, 2010
 NDE-68, Visual Examination for Leakage and Boric Acid Corrosion Control, Revision 0, September 2, 2010
 NDE-69, Visual Examination of Reactor Pressure Vessel Bottom Mounted Instrumentation Penetrations, Revision 0, September 29, 2010
 NDE-70, Examination of Reactor Vessel Upper Head Penetrations, Revision 0, October 11, 2010
 NDE-640, Ultrasonic Examination using Longitudinal Wave and Shear Wave Straight Beam Techniques, November 12, 2008
 NSD 322, Boric Acid Corrosion Control Program, Revision 2, December 30, 2009
 PDI-UT-2, General Procedure for Ultrasonic Examination for Austenitic Piping Weld, Revision E, July 1, 2010
 QAL-16, Inspection of ASME Section XI Field Piping Welds, Revision 30,

PIPs

O-11-09188, O-11-11124, O-11-13150, O-11-13282, O-11-13281, O-11-13029, O-11-12733, O-11-12437, O-10-02605, O-10-04452, G-11-00978, O-11-09188, O-11-11124, O-11-13150, O-11-13282, O-11-13281, O-11-13029, O-11-12733, O-11-12437, O-10-02605, O-10-04452, G-11-00978

Other Documents

Evaluation No. O-10-04444, Evaluation performed on May 28, 2010
 Evaluation No. O-10-04452, Evaluation performed on May 28, 2010
 Evaluation No. O-10-10144, Evaluation performed on December 1, 2010
 Evaluation No. O-10-04516, Evaluation performed on June 1, 2010
 Evaluation No. O-10-10546, Evaluation performed on December 12, 2010
 Evaluation No. O-11-02920, Evaluation performed on March 20, 2011

Evaluation No. O-11-02921, Evaluation performed on March 20, 2011
 Drawing# 068SE151, Closure Head-Final Machining and Assemble-Unit No 2, Rev. 4
 Drawing# 2-RC-0266, RCS from Pressurizer Spray Tank to Pressurizer, Revision 6
 Drawing# 2-RC-0203, RCS from HP Inspection normal make-up to Reactor Vessel, Revision 14
 Drawing# 2-RC-0204, RCS from Pressurizer Spray Tank to Pressurizer, Revision 15
 Work Order 01962883-01, RT examination of HPSI in RCP discharge line
 Work Order 01929007, PT examination of LPSI/elbow-Pipe to flange
 Work Order 01936354, PT examination of HP 31 valve in seal supply
 Work Order 01928959, UT examination of LPSI
 Work Order 01929534, VT-2 examination for N-722 code case CL, HL
 Work Order 01930665, General visual of reactor vessel head examination (non N-729-1)
 Work Order 01962883-01, Thermal Package of HPSI in RCP discharge line
 2008 video records of reactor vessel head examination (non N-729-1)
 Visual examination of IWF Reactor Vessel Skirt, 11/25/2002
 Ir192 Source certificate
 ASME Section XI Code Compliance Summary- 4th Interval
 Augmented ISI Examination Plan (includes N-770-1)
 PT Level II certificate for Moss dated 2/11/2010
 PT Level II certificate for Leeper dated 1/19/2009
 RT Level II certificate of Gantt dated 2/6/2010
 RT Level II certificate of Sherrill dated 2/6/2010
 Eye certificate of Moss dated 6/21/2010
 Eye certificate of Sherrill dated 6/20/2011
 Eye of Aftewicz, DZ Atlantic dated 9/11/2011
 Eye Certificate of McArdle dated 12/13/2010
 Eye Certificate of Leeper dated 6/27/2011
 General Visual of McArdle dated 2/3/2010
 Welding Visual of Moss dated 2/15/2010
 UT Level II certificate of Staaffer dated 9/21/2007
 UT Level II certificate of Howard dated 3/8/2010
 Anatech Eye Examination Certification (Burriss), dated March 15, 2011
 Anatech Eye Examination Certification (Darst), dated March 25, 2011
 Anatech Eye Examination Certification (Devoe), dated February 3, 2011
 Anatech Eye Examination Certification (Farr), dated February 10, 2011
 Anatech Eye Examination Certification (Ginther), dated August 22, 2011
 Anatech Eye Examination Certification (Johnson), dated January 6, 2011
 Anatech Eye Examination Certification (Lancaster), dated February 21, 2011
 Anatech Eye Examination Certification (Peterson), dated March 3, 2011
 Anatech Eye Examination Certification (Poschman), dated March 12, 2011
 Anatech Personnel Certification Summary Record (Burriss), dated August 25, 2009
 Anatech Personnel Certification Summary Record (Darst), dated January 28, 2009
 Anatech Personnel Certification Summary Record (Devoe), dated December 18, 2008
 Anatech Personnel Certification Summary Record (Farr), dated February 10, 2011
 Anatech Personnel Certification Summary Record (Ginther), dated December 18, 2008
 Anatech Personnel Certification Summary Record (Johnson), dated January 8, 2011
 Anatech Personnel Certification Summary Record (Lancaster), dated February 22, 2011
 Anatech Personnel Certification Summary Record (Peterson), dated October 15, 2009
 Anatech Personnel Certification Summary Record (Poschman), dated December 18, 2008
 B&W Certificate of NDE Personnel Qualification (Baumann), dated 12-Feb-2010

B&W Certificate of NDE Personnel Qualification (Chevalier), dated 28-Oct-2011
 B&W Certificate of NDE Personnel Qualification (Duffield), dated 4-Mar-2011
 B&W Certificate of NDE Personnel Qualification (Frye), dated 28-Oct-2011
 B&W Certificate of NDE Personnel Qualification (Shutes), dated 4-Mar-2011
 B&W Certificate of NDE Personnel Qualification (Wittenborn), dated 4-Mar-2011
 B&W Certificate of Vision Examination (Baumann), dated 2-Mar-2011
 B&W Certificate of Vision Examination (Chevalier), dated 28-Oct-2011
 B&W Certificate of Vision Examination (Duffield), dated 2-Mar-2011
 B&W Certificate of Vision Examination (Frye), dated 28-Oct-2011
 B&W Certificate of Vision Examination (Shutes), dated 2-Mar-2011
 B&W Certificate of Vision Examination (Wittenborn), dated 2-Mar-2011
 INTECH, Inc. Eye Examination Results Summary (Holmes), dated 2/10/2011
 INTECH, Inc. NDT Personnel Certification (Holmes), dated 1/19/2010
 MoreTech Certificate of Personnel Qualification (Chambers), dated 11/19/08
 MoreTech Certificate of Personnel Qualification (Merriman), dated 07-05-07
 MoreTech Certificate of Vision Examination (Chambers), dated 06/24/11
 MoreTech Certificate of Vision Examination (Merriman), dated 03/16/11
 ZETEC Certificate of Personnel Qualification (Anderson), dated 24NOV2008
 ZETEC Certificate of Personnel Qualification (Bipes), dated 21 June 2010
 ZETEC Certificate of Personnel Qualification (Cardillo), dated 8 October 2009
 ZETEC Certificate of Personnel Qualification (Crumpacker), dated February 18, 2010
 ZETEC Certificate of Personnel Qualification (Jacobs), dated 25 September 2010
 ZETEC Certificate of Personnel Qualification (Lape), dated July 14, 2011
 ZETEC Certificate of Personnel Qualification (Larsen), dated 17 September 2009
 ZETEC Certificate of Personnel Qualification (Lo), dated 15 August 2011
 ZETEC Certificate of Personnel Qualification (Newsom), dated 2 September 2011
 ZETEC Certificate of Personnel Qualification (Nissley), dated 26 Aug 09
 ZETEC Certificate of Personnel Qualification (Satterlee), dated 31 Aug 2010
 ZETEC Certificate of Personnel Qualification (Woller), dated 8 March 2010
 ZETEC Eye Examination Certification (Anderson), dated 8/18/2011
 ZETEC Eye Examination Certification (Bipes), dated 12 July 2011
 ZETEC Eye Examination Certification (Cardillo), dated 1/13/2011
 ZETEC Eye Examination Certification (Crumpacker), dated 12/14/2010
 ZETEC Eye Examination Certification (Jacobs), dated 7 September 2011
 ZETEC Eye Examination Certification (Lape), dated 07/14/2011
 ZETEC Eye Examination Certification (Larsen), dated 31 Jan 2011
 ZETEC Eye Examination Certification (Lo), dated 7/26/2011
 ZETEC Eye Examination Certification (Newsom), dated 8/09/2011
 ZETEC Eye Examination Certification (Nissley), dated 8/15/2011
 ZETEC Eye Examination Certification (Satterlee), dated 24 August 2011
 ZETEC Eye Examination Certification (Woller), dated 14 February 2011

Section 1R11: Licensed Operator Regualification

ASE -24, Active Simulator Exam, Rev. 18
 RP/0/B/1000/001, Emergency Classification, Rev. 28
 EP/1/A/1800/001, EOP – Rules & Appendix, Rev. 37

Section 1R12: Maintenance Effectiveness

MP/2-3/A/1310/006, RCP Seal- Bingham- Type RQV 875B-3- Replacement, Rev. 57

MP/2-3/A/1310/005, RCP Seal- Bingham- Type RQV 875B-3- Removal, Rev. 17
 2A2 RCP Seal Return Temperature Excursion White Paper, dated October 28, 2011
 NSD 310, Requirements for the Maintenance Rule, Rev. 10
 PIP O-11-13557; KHU-1 AC Sump Pump Failed Acceptance Criteria on Low Total Flow
 PT/1/A/2200/019; KHU Sump Pump Performance Test
 WO 2007926; I/R the KHU-1 AC sump pump, discharge flow low

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

ONS 2EOC25 RFO Supplemental Risk Review
 91-01 Activity-Dropping RCS Loops and Draining RxV to 80" on LT-5
 OP/2/A/1103/011 Enc. 4.1, Dropping RCS Loops and Draining to 145" Pzr Level
 OP/2/A/1103/011 Enc. 4.3, Draining RxV to 80" on 2LT-5
 91-01 Activity, OMP Pre-Outage Activities, 2EOC25, Rev 0
 EC91852, Unit 2 Main Control Board Additions
 EC91853, Unit 2 Main Control Board Additions
 91-01 Activity, Oconee Major Projects Outage Activities, 2EOC25, Rev. 1

Section 1R15: Operability Evaluations

WR 01042706; I&R AHU 3-14, Unit 3 Control Room Air Handling Unit
 Calculation OSS-0254.00-00-1021, Control Room Ventilation System design basis
 PIP O-06-7655, AP/0/A/1700/025 (SSF Emergency Operating Procedure) does not direct initial
 Main Steam branch line isolations within 10 minutes as described in the licensing basis
 for App. R fires.

Section 1R19: Post-Maintenance Testing

WO 01994449, U0 'C' SFC Pump: Perform Lubrication PM
 WO 01990641, U0 'C' SFC Pump: I/R Oil Level; Please Add Oil / Adjust Level
 MP/0/A/1840/040A, Pump- Motors- Miscellaneous Components- Lubrication Post Maintenance
 Testing, Rev. 2
 PIP O-11-11357, U0 "A" SF Cooling Pump Oil Was Found Discolored
 PIP O-11-07043, A Spent Fuel Cooling Pump Seal Leaking
 PIP O-11-07656, C Spent Fuel Cooler Pump Bullseye oil level at minimum level of ¼ and needs
 oil added.
 PT/2/A/0152/011, High Pressure Injection System Valve Stroke Test, Rev. 29
 PT/2/A/0151/006, Penetration 6 Leak Rate Test, Rev. 12
 EC 106083, Replace 2HP-5 Bettis SR60 Actuator
 PT/0/A/0600/021, Standby Shutdown Facility Diesel-Generator Operation, Rev. 13
 OP/0/A/1600/010, Operation of the SSF Diesel-Generator, Rev. 70
 Critical Activity Plan for 2011 SSF Fall Outage
 Critical/Complex Activity Plan for Unit 2 EC25 MFB #2 Outage Maintenance
 PT/2/A/0202/012, Component Test of ES Channels 1&2, Rev. 48
 IP/0/A/2001/003 I, Inspection and Maintenance of 4.16 kV Bus, 6.9 kV Bus, Generator Bus,
 Isophase Bus, and Main Feeder Bus, Rev. 03
 PT/1/A/0251/001, Low Pressure Service Water Pump Test, Rev. 97
 OP/1/A/1104/010, Low Pressure Service Water, Rev. 136
 SOMP 01-02 Reactivity Management, Rev. 8
 NSD 304, Reactivity Management, Rev. 18
 NRC RIS 2007-21, Adherence to Licensed Power Limits, Rev. 1

Section 1R20: Refueling Outage

RE/WPM/5.3, Checklist 5.3a, Areva New Fuel Inspection, Rev. 20
 MP/0/A/1500/008, New Fuel Assembly – Receipt And Storage, Rev. 33
 OP/2/A/1102/028, Reactor Building Tour, Rev. 5
 MP/0/A/1150/002, Reactor Vessel- Closure Head- Removal, Rev. 52
 OM 201.-2394, Closure Head and Plenum Assembly Handling, Rev. D02
 PT/0/A/0775/015, Core Alignment Verification Procedure, Rev. 12
 PT/0/A/0750/002, Core Inspections Procedure, Rev. 29
 OP/2/A/1502/007, Operations Defueling/Refueling Responsibilities, Rev. 79
 91-01 Activity – Core Offload/Reload
 PT/0/A/0750/017, Defueling Activities
 PT/0/A/0750/018, Refueling Activities, Rev. 19
 MP/0/A/1500/009, Defueling/Refueling Procedure, Rev. 64
 PT/0/A/1103/020, Power Maneuvering Predictions, Rev. 20
 PIP O-11-12383, Unit 2 ICS failed to reduce reactor power at expected maneuvering rate
 OP/2/A/1102/004, Operation at Power, Rev. 104
 OP/2/A/1102/010, Controlling Procedure for Unit Shutdown, Rev. 199
 OP/2/A/1502/009 Enc. 4.7, Penetration Status Sheet
 OP/2/A/1502/009 Enc. 4.10, Containment Closure Valve List
 SOMP 01-02, Reactivity Management
 PT/0/A/0711/001, Zero Power Physics Test

Section 1R22: Surveillance Testing

PT/0/A/0775/015, Core Alignment Verification Procedure, Rev. 12
 PIP O-11-14376
 NRC RIS 2007-21, Adherence to Licensed Power Limits, Rev. 1
 91-01 Activity, Emergency Power Switching Logic Functional Test

Section 1EP6: Drill Evaluation

RP/0/B/1000/001, Emergency Classification

Section 2RS1: Radiological Hazard Assessment and Exposure Controls**Procedures, Guidance Documents and Manuals**

HP/0/B/1000/016, Radiological Protection Requirements For Steam Generator Maintenance,
 Rev. 31
 HP/0/B/1000/054, Radiation Protection Routines, Rev. 42
 HP/0/B/1000/093, Defueling/Refueling Posting, Monitoring and Access Controls, Rev. 30
 HP/0/B/1000/095, Radiation Protection Instructions For Letdown Filter Replacement, Rev. 9
 HP/0/B/1000/097, Radiological Protection Requirements For Independent Spent Fuel Storage
 Installation Phase V and VI, Rev. 14
 HP/0/B/1000/104, Radiological Protection Requirements For Incore Detector Work, Rev. 20
 HP/0/B/1000/105, Entry into Containment at Power, Rev. 1
 HP/0/B/1000/106, Crudburst Posting, Monitoring and Access Controls, Rev. 2
 RPSM 5.8, Radioactive Material Source Control Requirements, Rev. 9
 RPSM 6.11, Maintenance of Radiation Control Zones, Rev. 3
 SH/0/B/2000/003, Preparation of a Radiation Work Permit, Rev. 10
 SH/0/B/2000/004, Taking, Counting and Recording Surveys, Rev. 11
 SH/0/B/2000/005, Posting of Radiation Control Zones, Rev. 9

SH/O/B/2000/012, Access Controls for High, Locked High, and Very High Radiation Areas,
Rev. 012

Records and Data

Air Sample ID 111025052, UNIT 2 – I/S RM 215 Change 2B Letdown Filter, Dated 10/25/11
 Air Sample ID 111026006, UNIT 2 RB – 2RCI Boundary, Dated 10/26/11
 Air Sample ID 111026007, UNIT 2 RB – 2RCI Breathing Zone Breach, Dated 10/26/11
 Air Sample ID 111026009, UNIT 2 RB – 2RCI Boundary Backup, Dated 10/26/11
 Air Sample ID 111026010, UNIT 2 RB – 2RCI Breach, Dated 10/26/11
 Air Sample ID 111026021, UNIT 2 RB – 3rd FL D Ring Head Move, Dated 10/26/11
 Air Sample ID 111026022, UNIT 2 RB – Canal Shallow End After Head Move, Dated 10/26/11
 Air Sample ID 111026042, UNIT 2 – Plenum Move Canal Sample, Dated 10/26/11
 Air Sample ID 111026043, UNIT 2 – 4th Floor Head Plenum Move, Dated 10/26/11
 Air Sample ID 111026044, UNIT 2 – 3rd Floor Plenum Move, Dated 10/26/11
 Air Sample ID 111026053, UNIT 2 Disassembly and Decon 2RC1 Boundary, Dated 10/26/11
 Air Sample ID 111026054, UNIT 2 RB – Disassembly and Decon 2RC1 Breathing Zone,
 Dated 10/26/11
 Air Sample ID 111027006, UNIT 2 – 2RCI Breathing Zone Backup, Dated 10/27/11
 Air Sample ID 111027007, UNIT 2 – 2RCI B/Z, Dated 10/27/11
 Air Sample ID 111027008, UNIT 2 – 2RCI Rebuild Boundary Backup, Dated 10/27/11
 Air Sample ID 111027009, UNIT 2 – 2RCI Boundary, Dated 10/27/11
 Fleet ALARA Manual, Attachment 6.2, ALARA Planning Worksheet, Reactor Vessel Annulus
 Entries, Dated 10/01/11
 National Source Tracking System, Annual Inventory Reconciliation Report, Dated 01/12/11
 RPSM 5.8, Enclosure 4.1, Administration of Sealed Source Control Source Record, ONS # 732,
 Solid Shepherd Calibrator, Dated 08/08/11
 RWP No. 2026, UNIT 2 Rx Bldg Annulus Inspection & Associated Work, Rev. 13
 RWP No. 2100, Routine Valve Maintenance, Rev. 18
 RWP No. 2152, UNIT 2 Building Remove/Replace Plenum, Rev. 13
 RWP No. 3401, U3 Rx. Building – Entry into the Reactor Building Under Power Operations,
 Rev. 32
 RWP No. 5008, Units 1, 2, & 3 Aux Bldg Removal and Replacement of Letdown Filters, Rev. 25
 Survey No. M-041511-22, Independent Spent Fuel Storage Installation, Dated 05/14/11
 Survey No. M-051311-6, Independent Spent Fuel Storage Installation, Dated 05/13/11
 Survey No. M-052910-2, Annulus Entry Made to Verify Boron Leaks, Dated 05/29/10
 Survey No. M-052910-4, Annulus Survey for Final Walkdown Under Vessel, Dated 05/28/10
 Survey No. M-060911-10, Independent Spent Fuel Storage Installation, Dated 06/09/11
 Survey No. M-071711-2, Independent Spent Fuel Storage Installation, Dated 07/17/11
 Survey No. M-081211-7, Independent Spent Fuel Storage Installation, Dated 08/12/11
 Survey No. M-091111-1, Independent Spent Fuel Storage Installation, Dated 09/11/11
 Survey No. M-102211-1, Radiation and Contamination Survey Unit 2 Reactor Building 3rd Floor,
 Dated 10/22/11
 Survey No. M-102311-1, Job Coverage Survey of UNIT 2 “B” Cavity, Dated 10/23/11
 Survey No. M-102311-27, Planview Updated After Transport and Storage of 2B S.S. Filter,
 Room 207A Filter Storage, Dated 10/23/11
 Survey No. M-102411-21, Survey Performed RM 215 U-2 Letdown Storage Tank Rm,
 Dated 10/24/11
 Survey No. M-102511-29, Survey Performed RM 215 U-2 Letdown Storage Tank Rm,
 Dated 10/25/11

Survey No. M-102511-30, Unit 2 Filter B Pre-Job Surveys, Dated 10/25/11
 Survey No. M-102511-34, Planview Updated After Changeout of 2B S.S. Filter, Room 207A Filter Storage, Dated 10/25/11
 Survey No. M-102511-41, Post-Shielding Radiological Survey Pressurizer Spray Line, Dated 10/25/11
 Survey No. M-102611-13, Contamination and Radiation Survey, 2-RC-1 Valve Breach, Dated 10/26/11
 Survey No. M-102611-31, Survey Performed Prior to Incore Work, Unit 2 Reactor Building Basement, Dated 10/26/11
 Survey No. M-102611-34, S&C Survey for Downgrading Canal UNIT 2 Canal, Dated 10/26/11
 Survey No. M-102611-36, Survey Performed Prior to Incore Work, Unit 2 Reactor Building 1st Floor, Dated 10/26/11
 Survey No. M-102611-39, S&C Radiation Survey following Plenum Move Unit 2 Reactor Building 3rd Floor, Dated 10/26/11
 Survey No. M-102611-41, Post Decon Survey of 2-RC-1, Dated 10/26/11
 Survey No. M-102711-2, Survey After Head Move Unit 2 Reactor Building 3rd Floor, Dated 10/26/11
 Survey No. M-102711-4, Contamination and Radiation Survey, Reassembling 2-RC-1, Dated 10/27/11
 Survey No. M-102711-5, Incore Survey on Pull and Park, Unit 2 Incore Tank, Dated 10/26/11
 Survey No. M-102711-20, Survey Performed After Incore Pull and Park Unit 2 Reactor Building Basement, Dated 10/26/11
 Survey No. M-111611-14, Under Reactor Vessel, Dated 11/16/11
 WO/Task # 01893075/01 & 04, Physical Inventory of Reportable Special Nuclear Materials, Dated 05/14/10
 WO/Task # 01943393/1, Physical Inventory of Reportable Special Nuclear Materials, Dated 04/13/11
 WO/Task # 01945825/01, Radiological Briefing Sheet, 2-RC-1 Removal, Dated 10/25/11
 WO/Task # 1974890-01, Radiological Briefing Checklist, Changeout of 2 "B" Letdown Filter & Transport to RM 207A, Dated 10/25/11
 WO/Task # 1974890-01, Letdown Filter Replacement, Dated 10/25/11

CAP Documents

PIPs O-09-08148, O-10-00474, O-10-03578, O-10-04391, O-10-08136, O-10-08137, O-11-03272, O-11-04070, and O-11-04695

Section 2RS2: Occupational ALARA Planning and Controls

Procedures, Guidance Documents and Manuals

Duke Energy Carolinas Long Range ALARA Plan 2009-2013 (2010 Update), Dated 05/20/10
 Duke Energy Carolinas Long Range ALARA Plan 2009-2013 Attachment A - Oconee Initiatives (ONS 2011 Update), Dated 10/10/11
 Duke Energy Fleet ALARA Manual, Section III, ALARA Program, Rev. 15
 Duke Energy Fleet ALARA Manual, Section IV, ALARA Planning, Rev. 18
 Duke Energy Fleet ALARA Manual, Section V, Temporary Shielding, Rev. 15
 Duke Energy Fleet ALARA Manual, Section VII, Tracking and Reporting of Station Exposure, Rev. 17
 Duke Energy Fleet ALARA Manual, Section VIII, Station ALARA Committee, Rev. 17
 Duke Energy Fleet ALARA Manual, Section X, Exposure Goals, Rev. 15
 Duke Energy Nuclear Generation, RP Policy III-01, Radiation Work Permit, Revision (Rev.) 003

Duke Energy Oconee Nuclear Station, HP/0/B/1010/004, Selection of Proper Respiratory Equipment and Respiratory Surveillance Requirements, Rev. 32
 Duke Energy Standard Procedure for CNS, MNS & ONS, SH/0/B/2000/003, Preparation of a Radiation Work Permit, Rev. 10
 Duke Energy Standard Procedure for CNS, MNS & ONS, SH/0/B/2000/007, Placement of Personnel Dosimetry for Non-Uniform Radiation Fields, Rev. 1
 Memorandum to File No. OS-750.20, Oconee Nuclear Station Multi Badging Analysis for SG Nozzle Dam Activities, Dated 08/29/05

Records

1EOC26 RP Outage Report, Duration 04/01/11 - 06/4/2011, 9/1/11
 1EOC26 Source Term Reduction Team Script, 3/30/11
 2EOC24 Source Term Reduction Team Script, 4/22/10
 3EOC25 Source Term Reduction Team Script, [No Date Available]
 ALARA Planning Worksheet (APW), RWP # 2152, Remove & Replace Reactor Vessel Plenum, Dated 10/4/11
 APW, RWP # 2175, De-Fuel and Refuel Operations WO#01963347, Dated 10/06/11
 APW, RWP # 2176, Incore Instrumentation Work, Dated 11/13/11
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